

ATOMIC ENERGY *newsletter*®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
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Dear Sir:

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Connecticut Aeronautic Nuclear Engine Laboratory (CANEL), operated by Pratt & Whitney Aircraft, has new general manager (Bernard A. Schmickraft), and is to be operated by P&W as a separate company division. New facilities are being built at Middletown, Conn., by the U. S. Air Force (for whom CANEL does its research and development work), and the laboratory is expected to occupy them next Summer. (Other BUSINESS NEWS, p. 2 this LETTER.)

Production of heavy water in the Farbwerke Hoechst new plant will start the second half of this year according to Herr Winnacker, chairman. He said the new German plant was built at the low cost of \$800,000. (This compares with the two large-scale heavy water production plants in the U. S., the Dana, Indiana plant and the Savannah River, S. C., plant, having capital costs of \$100 million and \$164 million, respectively.) The new German plant will initially produce 6-tons per year, but this capacity will be greatly expanded at a later date.....Vickers Nuclear Engineering Co. said in London last week that it has been engaged since its formation in February 1956 on a project for the Admiralty concerning nuclear propulsion machinery for a submarine. It has made good progress along these lines the company said. (Other NEWS FROM ABROAD, p. 3 this LETTER.)

Discussions in the field of controlled thermonuclear reactions covered progress being made in the U. S. and Great Britain on research underway in the two nations, at conference held at Berkeley, Calif., last fortnight. Several hundred U. S. representatives from scientific, industrial, and educational fields were joined by ten British scientists. (British work is concentrated at Harwell, and at laboratories of Associated Electrical Industries, Ltd., where work is being done under contract to the U. K. Atomic Energy Authority.) Other MEETINGS, CONFERENCES, p. 4 this LETTER.)

Contract to construct hot cell area in the aircraft nuclear propulsion area, national reactor testing station, Idaho Falls, Idaho, has been awarded J. H. Wise & Son, Inc., Boise, Idaho, by the USAEC. Low bid of the Wise firm was \$469,100; four firms had submitted bids. (Other BIDS ASKED, CONTRACTS AWARDED, p. 5 this LETTER.)

Pittsburgh Plate Glass Co. has now become half-owner of N.R.C. Metals Corp., building plant in Florida for hafnium and zirconium production, and holding USAEC contract to sell 3.5-million lbs. of its zirconium and hafnium production during its first five years of operation. N.R.C. had been wholly-owned subsidiary of National Research Corp.; by stock purchase, Columbia-Southern Chemical Corp. has become an equal owner with National Research Corp. (Columbia-Southern is wholly owned subsidiary of Pittsburgh Plate Glass.) (Other FINANCIAL NEWS, p. 3 this LETTER.)

First export shipment by U.S. firm of 20% enriched uranium-aluminum alloy nuclear reactor fuel elements was made last fortnight by Babcock & Wilcox Co., from its Lynchburg, Va., nuclear facilities plant. Elements will be used in a pool type nuclear reactor being built for the Netherlands Government.

ATOMIC ENERGY BUSINESS NEWS...

NEW NUCLEAR POWER PLANTS FOR U. S.:- Additional U. S. utility companies have made proposals to the USAEC to erect nuclear powered electrical generating plants under the USAEC's power reactor development program which provides financial and other assistance to such projects.

One proposal was made by Pacific Power & Light Co. Paul B. McKee, company president, said the firm has acquired 14-sq. miles of land near Hanford, Wash., plutonium (production reactor) project as site for power reactor that may be built by his company together with Washington Water Power Co., Portland General Electric Co., and Montana Power Co.

Another group, headed by American Gas & Electric Service Corp., intends to build a 13,000 electrical kw. prototype nuclear generating station, at a cost of from \$15 million to \$31 million. This would lead (within the next six years) to a 200,000 electrical kw. plant. Companies associated in this project with A. G. & E. are Cleveland Electric Illuminating Co.; Southern Ohio Electric Co., Dayton Power & Light Co., Indianapolis Power & Light Co., Louisville Gas & Electric Co., Ohio Edison Co., Pennsylvania Power Co., Southern Indiana Gas & Electric Co., and West Penn Power Co. with three subsidiaries. (A.G.&E. is now studying three high-temperature, high-pressure reactor designs: Babcock & Wilcox's graphite suspension reactor with ceramic fuel elements; Nuclear Development Corp. of America's liquid-metal-cooled natural uranium, heavy water moderated reactor; and General Electric Co.'s sodium-cooled, graphite-moderated reactor with ceramic fuel elements.)

HIGH CONSTRUCTION COSTS FOUND IN NUCLEAR POWER PLANTS:- Costs of constructing large-scale nuclear power plants are increasing "substantially above first estimates", Yankee Atomic Electric Co., and Consolidated Edison Co., told Joint Congressional Committee on Atomic Energy at hearings in Washington last fortnight; both firms are building nuclear power plants in the northeast. Other plants are similarly affected. Construction costs of the Shippingport, Pa., nuclear power plant are expected to exceed the estimate of three years ago by 50%. The nuclear power plant project of Consumers Public Power District, Beatrice, Neb., originally estimated at \$25 million, is expected to cost twice that amount. Estimates for Wolverine Electric Cooperative's nuclear power plant at Hershey, Mich., have been increased 25%. The Committee was told that these increased costs, due to the inflationary trend, will increase cost of electrical energy from these stations.

GOVERNMENT FINANCING OF NUCLEAR POWER STATIONS IS SEEN:- The present uncertainties connected with nuclear power plants do not now justify their development with private money, R. L. Doan, manager, atomic energy div., Phillips Petroleum Co., told annual meeting of the American Institute of Mining, Metallurgical and Petroleum Engineers in New Orleans last week. This could lead to an unprecedentedly large scale public power program in competition with private power, he stated. It is principally in an attempt to stave this off that some large utilities, servicing densely populated areas in the east, have decided to build nuclear power plants, he explained. These companies, he said, are large enough to absorb the extra costs without adversely affecting over-all power rates. However, Mr. Doan suggested how the financing and direction of the nuclear power program could be left entirely in the hands of the government without jeopardizing its ultimate ownership by private companies when nuclear power becomes economically competitive. To do this, legal steps must be taken now: (1) Funds allotted to the USAEC to build large scale reactors capable of delivering substantial quantities of steam, (2) Reactors built at sites determined by bidding for purchase of steam by utilities, (3) Legislation enacted requiring sale of reactors to highest bidders when operations show them feasible for commercial power.

NUCLEAR RESEARCH LABORATORY TO BE BUILT IN STERLING FOREST, N.Y.:- Nuclear research center to be built in Sterling Forest, N.Y., some 40 miles north of New York City, by Union Carbide & Carbon Corp., will involve multi-million dollar investment. Center, to be operated jointly by two UCC&C divisions, Union Carbide Nuclear Co., and Union Carbide Ore Co., will have such facilities as nuclear reactor, radioactive materials laboratory, ore and engineering laboratory, and building for allied research operations and administrative functions. Completion of the center is scheduled for 1958 or early 1959. (Contract for a 5 megawatt pool-type nuclear research reactor, to cost in the \$500,000 range, has been given by UCC&C to AMF Atomics, Inc., subsidiary of American Machine & Foundry Co.)

ATOMIC ENERGY FINANCIAL NEWS...

NEW YORK STATE BOARD OK'S UTILITY PARTICIPATION:- Approval was given last fortnight by Public Service Commission (New York) allowing three New York utility companies to guarantee a percentage of the \$15 million in notes of Power Reactor Development Co. of Detroit, Michigan. The companies concerned, Long Island Lighting Co., Central Hudson Gas & Electric Corp., and Rochester Gas & Electric Corp., are part of a group of 21 utility and industrial firms making up PRDC. (PRDC is erecting fast breeder reactor at Lagoon Beach, Mich., and will sell steam to Detroit Edison for generating electricity.)

NEW ISSUE PLANNED:- Daystrom, Inc., Murray Hill, N.J., diversified manufacturer of electronic and nuclear equipment (through its Daystrom Nuclear div.) has asked Securities & Exchange Commission registration of \$8 million in convertible subordinate debentures which the firm proposes to offer publicly. Daystrom told the SEC it will use proceeds to finance expansion of its manufacturing facilities.

BEST EARNINGS IN COMPANY HISTORY, FIRM REPORTS:- Sales of High Voltage Engineering Corp., Burlington, Mass., rose 39% in 1956 and net earnings for that year were up 58%, the company's annual report now discloses. Gross sales for 1956 were \$2,812,885, with after-tax earnings of 45¢ per common share; this compared with 1955 gross of \$2,007,101 and earnings of 29¢ per common share. For 1956, year end backlog was \$6 million, highest in company's history. (High Voltage, manufacturing supervoltage radiation machines based on designs of R. J. Van de Graaff, claims to be world's largest manufacturer of such devices. It is now occupying new 88,000-sq. ft. plant at Burlington, Mass., having outgrown former Cambridge, Mass. quarters. Its machines find uses in chemical processing, therapy, radiography, and research, and sales have been made world-wide.)

INCREASE IN COMMON STOCK PLANNED:- General Dynamics Corp., industrial enterprise with nuclear operations (Electric Boat div., constructing nuclear submarine hulls, Convair div., experimenting with airframe for nuclear plane, etc.) proposed at directors' meeting in Indio, Calif., last week increase in authorized common shares to 30 million from the current 15 million. Directors' action will be submitted for approval to stockholders at annual meeting April 25. Company has about 7,700,000 shares outstanding at present. Additional stock will enable company to expand into diversified areas, John J. Hopkins, Dynamics chairman and president explained. (Number of directors was also reduced to 15 from 30, with only four of the new board as officers of the corporation. Objective was to relieve officers of director's duties, and free them for "increasing demands" on their time, Mr. Hopkins stated.)

NEWS FROM ABROAD...in the nuclear field...

GREAT BRITAIN:- Nuclear science institute, financed largely by public grants, is to be established by the British Government. It is intended that it will have facilities and equipment for work not available by an individual university or institution.

Further details of the nuclear power project of the South of Scotland Electricity Board (this LETTER, Vol. 17, No. 1) planned for West Killbride, Scotland, show that it will have an ultimate electrical output of 320,000 kw. of electricity. To be built by the GEC-Simon Carves Atomic Energy Group, first reactor is scheduled to become critical in 1960-61. Approximately 25% of the Board's service area electricity needs are expected to be available from the plant.

RHODESIA:- Staking of uranium claims has blocked out large areas in the uranium deposits in the Zimunya Native Reserve, some 15-miles south of Umtali, Rhodesia. About 28 blocks of claims have been registered, with additional claims being staked.

FRANCE:- Heads of the Governments of six nations issued communique from Paris last fortnight agreeing on pooling their nuclear resources under a European Atomic Energy Commission. Nations are France, W. Germany, Italy, Belgium, Luxembourg, and The Netherlands. (Representatives of these nations conferred last fortnight in Washington, D.C., with USAEC and State Department officials, outlining Euratom's goals in effort to see if they can be reached. Plans call for 3 million kw. of electrical energy generated by nuclear means by 1963 and a 3 million kw. increase each year to the 1967 goal of 15 million kw. To reach this goal, Euratom says it will need about 6,000 tons of natural uranium per year, or 18 tons of uranium-235. Estimated cost is \$1 billion per year for five years.)

MEETINGS, CONFERENCES, COURSES...in nuclear field...

MEETINGS:- One day symposium on Nuclear Technology in the Petroleum and Chemical Industries, at national meeting, American Chemical Society, Miami, Fla., Apr. 7-12, will hear some ten papers on the subject. (Full program from: ACS, Washington, D. C.)

Annual meeting of Radiation Research Society will be held May 13-15, Rochester, N. Y. Symposia on radiation genetics and on radiation chemistry will cover aspects of these subjects. (Program from RRS secretary A. Edelman, c/o Nuclear Science & Eng. Corp., P. O. Box 10901, Pittsburgh 36, Pa.)

CONFERENCES:- Fifth conference on atomic energy of National Industrial Conference Board will be held Mar. 14-15, Philadelphia, Pa. (Details from NICB, 460 Park Ave., New York, N.Y.)

SYMPOSIUM:- Nondestructive Tests Developed in the Field of Nuclear Energy will be symposium to be held in Chicago, Apr. 16-18, sponsored by American Institute of Chemical Engineers, American Nuclear Society, Society for Testing Materials, and Society for Nondestructive Testing. (Program from A. I. Ch. E., New York, N.Y.)

American Power Conference, Mar. 27-29, Chicago, will hear some four papers devoted to nuclear power plants and related problems. (Program from E. R. Whitehead, Sec'y., American Power Conference, Ill. Institute of Technology, Chicago 16, Ill.)

NEW PRODUCTS, PROCESSES & INSTRUMENTS...for nuclear lab & plant...

FROM THE MANUFACTURERS: Liquid metal level indicator, said to be sensitive to 1 mm changes in height, permits measurements to be made through container wall. Indicator, using balanced inductance bridge circuit, may be adapted to different container wall thicknesses by varying signal frequency. Container must be of non-magnetic wall materials, although circuit modification permits use of magnetic containers. --Nuclear Development Corp. of America, White Plains, N. Y.

New model Van de Graaff particle accelerator for radiotherapy, of 2-million electron-volt capacity, has x-ray output of 300 roentgens/min. at 50 cm, 150 at 70 cm, and 75 at 100 cm. High output of machine can reduce therapeutic treatment periods by factor of several times, enabling more patients to be accommodated in a working day. --High Voltage Engineering Corp., Burlington, Mass.

MANUFACTURERS' NEWS:- Evaluation of ceramic fuel elements made by Norton Company is underway at Argonne National Laboratory in the boiling water reactor there. Although Argonne is presently sole customer for these particular elements, Norton feels that when their operating characteristics are determined, they will find a market on the basis of longer life than metallic elements, and the fact that in production they will be cheaper than metallic elements, and may be more easily re-processed.

On basis of pre-production prospects, capacity of U. S. Industrial Chemicals' zirconium production plant at Ashtabula, Ohio, is being increased from 1.5-million to 2-million lbs./year. Plant is scheduled to go on-stream second quarter of this year. (Firm holds contract to sell USAEC 1-million lbs./year for 5-years of its reactor-grade zirconium, feels increased output will be absorbed by increasing demand.)

PROCESSES:- Chemical processing of irradiated or "spent" fuel elements from nuclear reactors will be provided for operators of private nuclear reactors by the USAEC under a new policy recently established by the Commission, pending setting up commercial services to do this work. The service will cover waste disposal in addition to processing the irradiated fuel elements and blanket materials. Contracts will be individually negotiated with reactor operators by the USAEC.

MANUFACTURERS' LITERATURE:- Model SP8 master-slave manipulator, developed by Savage & Parsons, Ltd., Watford, Herts., England, in collaboration with Atomic Energy Research Establishment, Harwell, and now available commercially, is described in new publication No. 7/5 available from company on request.

Bulletin No. 407 of Nuclear Science & Engineering Corp., P.O. Box 10901, Pittsburgh 36, Pa., describes that firm's radiation protection services including accountability of nuclear materials; criticality precautions for fuel element fabrication; and health physics services.

Fourth edition of its isotope catalog may be obtained on request from Isotope Div., A.E.R.E., Harwell, Didcot, Berks., England. (Separate catalog listing naturally radioactive materials, long-lived fission products, etc., is available from Radiochemical Center, Amersham, Bucks., England.)

BIDS ASKED, CONTRACTS AWARDED...in the nuclear field...

CONTRACTS AWARDED:- Renewal contract has been awarded New York University by USAEC for "investigation of certain physical and chemical dosimetric techniques". Contract which will continue work of Morris H. Shamos, was one of a group of 48 research contract renewals in various fields recently made by the USAEC to U.S. universities and hospitals.

Consultant-advisor contract has been signed between Walter H. Zinn, president, General Nuclear Engineering Corp., Dunedin, Fla., and the Florida Nuclear Power Group, consisting of Florida Power Corp., Florida Power & Light Co., and Tampa Electric Co. Agreement with Dr. Zinn is in addition to the working agreements Florida Nuclear Power Group already has in effect with Babcock & Wilcox, Allis-Chalmers Mfg., and Stone & Webster Engineering.

ATOMIC ENERGY PATENT DIGEST...

PATENT GRANTS TO PRIVATE INDIVIDUALS AND/OR ORGANIZATIONS:- Device for radioactive logging of a bore-hole traversing an earth formation. U.S. Pat. No. 2,782,318 issued Feb. 19th, 1957; assigned to The Texas Co., New York. (Application date: Aug. 9, 1951.) (Inventor: Gerhard Herzog.)

Determining contamination of liquid metals in a liquid metal heating system in which the metal is circulated through conduits from and to a heat source. U.S. Pat. No. 2,782,369 issued Feb. 19, 1957; assigned to Callery Chemical Co., Pittsburgh, Pa. (Application date: May 4, 1953.) (Inventors: R. C. Werner, S. L. Walters.)

Method of treating monazite to recover valuable products from it. U.S. Pat. No. 2,783,125 issued Feb. 26, 1957; assigned to Societe de Produits Chimiques des Terres Rares, Paris, France. (Application date: July 18, 1950.) (Inventors: Charles de Rohden, Maurice Peltier.)

Recovering zirconium oxide from a zirconium salt solution. U.S. Pat. No. 2,783,126 issued Feb. 26, 1957; assigned to Metal & Thermit Corp., New York, N.Y. (Application date: Oct. 4, 1954.) (Inventor: Hartmut W. Richter.)

PATENT GRANTS TO GOVERNMENTAL ORGANIZATIONS:- Pump cylinder assembly. U.S. Pat. No. 2,782,081 issued Feb. 19, 1957; assigned to United States of America (USAEC.) (Application date: Apr. 26, 1954.) (Inventor: James Entwistle.)

Device for indicating exposure to a burst of nuclear radiation. U. S. Pat. No. 2,783,386 issued Feb. 26th, 1957; assigned to United States of America (Secretary of the Navy.) (Application date: Mar. 29, 1954.) (Inventor: Charles E. Mandeville, Herbert O. Albrecht.)

Process for recovering high grade uranium concentrate from low grade uranium. U.S. Pat. No. 2,782,091 issued Feb. 19, 1957; assigned to United States of America (USAEC) (Application date: July 13, 1951.) (Inventor: John J. Brunner.)

Recovering uranium salts from mixtures. U.S. Pat. No. 2,782,092 issued Feb. 19, 1957; assigned to United States of America (USAEC). (Application date: Apr. 12, 1945.) (Inventors: David X. Klein, Walter V. Wirth.)

Preparing metallic thorium in compact form. U.S. Pat. No. 2,782,116 issued Feb. 19, 1957; assigned to United States of America (USAEC). (Application date: Sept. 6, 1946.) (Inventors: Frank H. Spedding, Harley A. Wilhelm, Wayne H. Keller.)

PATENT NEWS:- British and Dutch nuclear patent grants of Constantin Chilowski, covering the use of materials for nuclear reactors, have been sold to Dow Chemical Co., Midland, Mich. The foreign grants, as well as pending U.S. patents (included in the sale) cover sodium-potassium alloys used as heat transfer materials, and methods of obtaining suspension of uranium particles in the agglomerated mass in a nuclear reactor. (Dow had been doing research paralleling the Chilowski work, for possible applications in chemical production.)

Amendment of USAEC patent regulations covering compulsory licensing (10 CFR-Part 2) has been asked by Washington law firm of Strauch, Nolan & Neale. The attorneys have asked that definition of "patent owner" include "the owner of record and all licensees identifiable from any license agreements recorded in the U. S. Patent Office and any party of which the Commission has actual knowledge offering a license to others under such patent".

Sincerely,

The Staff,
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